The majority of portable electronic device manufacturers utilize a common form factor consisting generally of a flat planar form factor with a single surface dedicated mainly for use as a display surface, while the other surfaces remain largely unused, save for the occasional button or switch. The conventional form factor has been used in devices such as smart phones, tablet devices, and electronic book readers. Although this form factor lends itself to electronic devices that are aesthetically pleasing and easy to handle, the requirement for a planar display and associated circuitry inherently limits the amount of surface area to single surface. More specifically, the size of the user interface is generally limited to a portion of the device that takes up less than half of the overall device surface area.

In one embodiment, utilizing a flexible display can provide additional viewing area without increasing either the size or shape of the electronic device. For example, a flexible display can be folded in such a way as to form a continuous loop such that images (still or video) can be presented in a wrap-around manner in which the images appear to be presented in a continuous loop. The flexible display can be folded into a tightly wound configuration and placed within an enclosure at least a portion of which is transparent. In some cases, the enclosure can be formed of glass at least a portion of which is made opaque (at least translucent) by the addition of ink or other masking material. In other cases, however, the entire enclosure can be fully transparent in which case the folded flexible display can unwind when placed within the glass enclosure. Once fully unwound, the flexible display can present images at any portion of the glass enclosure.

These and other embodiments are discussed below with reference to FIGS. **1**-*x*. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes only and should not be construed as limiting.

FIG. **1**A shows housing **102** alongside representative flexible display assembly **104**. Housing **102** can take many forms. For example, housing **102** can be multi-part in which a portion is metallic in nature (such as aluminum) whereas another portion can be formed of optically transparent material such as glass. For the remainder of this discussion, however, housing **102** is considered to be fully formed of transparent (or at least semi-transparent) material such as glass. In this way and without loss of generality, transparent housing **102** may be made of any transparent material such as for example glass, or plastic. The material selected generally depends on many factors including, but not limited to, strength (tensile), density (lightweight), strength to weight ratio, Young's modulus, corrosion resistance, formability, finishing, recyclability, tooling costs, design flexibility, manufacturing costs, manufacturing throughput, reproducibility, and the like. The material selected may also depend on electrical conductivity, thermal conductivity, radio wave and optical transparency, combustibility, toxicity, and the like. The material selected may also depend on aesthetics, including color, surface finish, and weight.

In one particular embodiment, housing **102** can be formed from a glass tube. The glass tube may be formed from an extrusion or extrusion-like process. Some of the reasons for using glass over other materials are that glass is strong, stiff, and radio transparent and therefore a suitable material for an enclosure of an electronic device capable of wireless communications and presenting visual content at any surface thereof. The radio transparency is especially important for wireless hand held devices that include antennas internal to the enclosure. Radio transparency allows the wireless signals to pass through the enclosure and, in some cases, even enhances these transmissions. It will be understood that, although a glass enclosure is capable of wireless communications, the embodiments described herein need not be capable of wireless communication.

Using glass for the fabrication of housing **102** can also provide the portable electronic device with a unique, aesthetically pleasing appearance. To further provide an aesthetically pleasing appearance, the glass can also be coated with an oleophobic coating to reduce finger prints and smudging on the glass. The glass can also be coated with an anti-reflective coating to reduce glare. It will be understood that chemically strengthened glass can also be scratch resistant. The glass can also be color tinted in a wide variety of colors and can also have a variety of surface finishes including smooth and rough. For example, the glass can be polished to create a smooth (gloss) finish, or a blasting operation can performed to create a rough or textured (matte) finish. Portions of the glass can also be textured so that the textured surface will disperse light and can be used as light indicator. As discussed in more detail below, the glass material can be formed so that the enclosure can have a seamless or substantially seamless appearance. The seamless enclosure, in addition to being aesthetically pleasing, can provide the added benefit of less contamination and moisture intrusion into the interior of the device.

In some cases, even though housing **102** is fully fabricated from a transparent material such as glass, it may be desirable to obscure at least portions of housing **102** from the view of an end-user. For example, internal components may be visible through housing **102** detracting from the overall look and feel of the electronic product. Therefore, in some cases, portions of housing **102** can be optically obscured. The glass enclosure around the display can be made opaque so the operational components of the device are not visible. One method of rendering portions of housing **102** opaque is to use an ink printing process in those areas where opacity is desired to create a mask. For example, appropriately placed ink can render a masked region that is optically opaque. For example, an area surrounding a display can be masked to provide an emphasis and accentuate visual content presented by the display. It should be noted that in alternative embodiments, portions of housing **102** can be painted or screen printed. Other techniques for achieving opacity in certain areas, such as using a two-layer clad glass.

It should be noted that glass has been used in a wide variety of products, including electronic devices, such as watches, and phones. In these cases, however, the glass materials have not been used as structural components. In most of these cases, the glass materials have been used as cosmetic accoutrements or solely as a screen for a display. It is believed that, up until now, glass materials have never been used as a structural element providing substantially all of the structural frames, walls and main body of a consumer electronic device, and more particularly an enclosure of a portable electronic device, such as a media player or mobile phone.

The glass enclosure also allows a display screen to be positioned underneath and protected by the glass enclosure. The glass material of the enclosure is capable of capacitive sensing so that a touch screen can be used through the glass enclosure. The cross-sectional shape, including both the outer and inner shapes of housing **102** may be widely varied. They may be formed from simple or intricate shapes, whether rectilinear and/or curvilinear. For hand held devices, it is typically preferred to use a shape that better fits the hand (e.g., form fits). By way of example, a rectangle with curved edges or an oval or pill shaped cross section having curvature that more easily receives the hand may be used. It should be noted that the inner cross-sectional shape may be the same or dif-